No. 857,041. PATENTED JUNE 18, 1907.

T. A. EDISON.

CAN OR RECEPTACLE FOR STORAGE BATTERIES.

APPLICATION FILED OCT. 5, 1903.

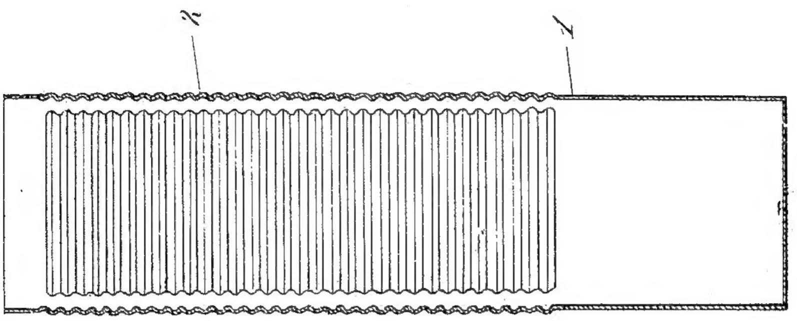

Fig. 2

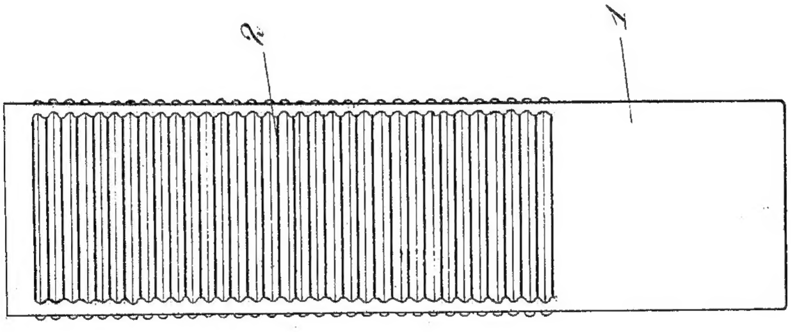

Fig. 1

Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, ORANGE, NEW JERSEY, ASSIGNOR TO EDISON STORAGE BATTERY COMPANY, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CAN OR RECEPTACLE FOR STORAGE BATTERIES.

No. 857,041. Specification of Letters Patent. Patented June 18, 1907.

Application filed October 5, 1903. Serial No. 175,819.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Llewellyn Park, Orange, in the county of Essex, State of New Jersey, have invented certain Improvements in Cans or Receptacles for Storage Batteries, of which the following is a description.

My invention relates to a new and improved can or receptacle for storage batteries preferably of my improved type, and wherein an alkaline electrolyte is used. These cans are made of iron, nickel-plated on the inside, and preferably on the exterior also, so as not to be affected by the solution.

The essentially novel feature of my improved can or receptacle consists in making the same without seams (except, of course, where the cover or cap is applied) whereby I do away with the necessity of using solder which may be affected by the solution, or which may become loose by the flexing of the walls of the can in use.

The object of my invention is to produce a seamless iron can or receptacle at low cost, and which shall be very light and strong, so as to be eminently suited for the intended purpose.

Preferable my improved can or receptacle is obtained by a process of electro-deposition and by subsequently annealing the same, as I describe in an application for Letters Patent Serial No. 175,818 filed on even date herewith. So far as I know no hollow article of iron similar to a can or receptacle has ever been successfully produced by an electro-plating process before my invention, and I am not aware, in fact, that such a product has ever before been attempted. I have found as a result of continued experiments that when the attempt has been made to electro-plate iron on a mold or former, the deposited coating tends to contract, thereby cracking and disrupting the same before a layer of practicable thickness is secured. I have discovered, however, that by first applying a coating of copper to the mold, the contracting tendency, of the iron film electro-deposited thereon is effectively resisted, whereby I am enabled to obtain a perfectly uniform iron deposit and in this way produce cans or receptacles of iron which are entirely suitable for the purpose.

In order that the invention may be better understood, attention is directed to the accompanying drawing forming a part of the present specification, and wherein:

Figure 1, is a side elevation of my improved can or receptacle, showing the same in its preferred form, and Fig. 2, a vertical, sectional view of the same.

In both of these views corresponding parts are indicated by the same numeral of reference.

The can 1, is made of iron, seamless, and is nickel-plated on its interior and preferably on its exterior also. Preferably, the can is provided with horizontal corrugations 2, formed in the sides of the can within the edges thereof, by displacing the metal (as, for example, by suitable dies) so as to very greatly stiffen the sides and permit metal of minimum thickness to be used. The can is relatively narrow and presents a form which could not practicably be made by stamping or drawing or other processes now used for producing hollow articles. I, therefore, make the can by a process of electro-deposition, preferably as described in said companion application. In carrying this process into effect, and speaking generally, I first coat a sectional mold or former with paraffin wax, to which finely divided graphite is lightly applied, after which a plating of copper is electro-deposited thereon. On this copper film I then preferably apply a plating of nickel, electrolytically, after which the iron is electro-plated on the latter in an iron solution to which has been added a bulk of crushed charcoal to make the plating uniform and smooth and to prevent pitting due to the presence of gas bubbles. By adding charcoal to the iron solution I find that a small percentage of carbon is incorporated with the deposited iron, which, therefore, in the subsequent annealing is converted practically into a superior product of soft steel, containing, according to my analysis, almost .4% of carbon. As a result, the finished article is considerably tougher and more rigid than when made of pure iron. It will be understood, of course, that when some non-carbonaceous material, like pumice-stone, is added to the iron solution, a deposit of absolutely pure iron will result. The mold or former (with the deposited coatings) is now dipped in hot water to melt the wax, after which the mold sections are separated and the resulting hollow article is removed. The copper film originally applied to the mold is now removed electrolytically, and the article is then annealed, preferably in a non-oxidizing atmosphere, like hydrogen gas, in which the cooling is also effected. Finally, the edge of the can is trimmed off smooth, and the corrugations, if used, are formed, after which the article may be nickel-plated on its exterior and on its interior also if desired, whereupon the can or receptacle will be complete. Of course, the nickel-plating of the interior of the can may be effected after the latter has been removed from the former, but in that case the deposit will be thinnest at the corners and may, therefore, be imperfect; while by applying a nickel deposit to the mold as described and as is preferable, the film thereof will be thickest at the corners, as is obviously desirable

My improved can or receptacle is distinguished from seamless articles made by stamping or drawing a metal blank in the respects, first, that it presents a form which could not be possibly stamped or drawn; and, second, that the metal is not distorted or stretched, except, of course, to a slight extent at the corrugation.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is—

A seamless can or receptacle made of electro-deposited iron and carbon incorporated therewith, substantially as set forth.

This specification signed and witnessed this 3rd day of Oct., 1903.

THOMAS A. EDISON.

Witnesses:
Frank L. Dyer,
William A. Dolan.